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Association of Cardiovascular Disease Risk Factors With Sociodemographic Characteristics and Health Beliefs Among a Community-Based Sample of African American Adults in Minnesota

Jeremy R. Van't Hof, MD, MS; Sue Duval, PhD; Russell V. Luepker, MD, MS; Clarence Jones, MEd; Sharonne N. Hayes, MD; Lisa A. Cooper, MD, MPH; Christi A. Patten, PhD; and LaPrincess C. Brewer, MD, MPH

Abstract

Objective: To assess cardiovascular disease (CVD) and CVD risk factors and their association with sociodemographic characteristics and health beliefs among African American (AA) adults in Minnesota.

Methods: A cross-sectional analysis was conducted of a community-based sample of AA adults enrolled in the Minnesota Heart Health Program Ask About Aspirin study from May 2019 to September 2019. Sociodemographic characteristics, health beliefs, and self-reported CVD and CVD risk factors were collected. Prevalence ratio (PR) estimates were calculated using Poisson regression modeling to assess the association between participants' characteristics and age- and sex-adjusted CVD risk factors.

Results: The sample included 644 individuals (64% [412] women) with a mean age of 61 years. Risk factors for CVD were common: hypertension (67% [434]), hyperlipidemia (47% [301]), diabetes (34% [219]), and current cigarette smoking (25% [163]); 19% (119) had CVD. Those with greater perceived CVD risk had a higher likelihood of prevalent hyperlipidemia (PR, 1.34; 95% CI, 1.14 to 1.57), diabetes (PR, 1.61; 95% CI, 1.30 to 1.98), and CVD (PR 1.61; 95% CI, 1.16 to 2.23) compared with those with lower perceived risk. Trust in health care provider was high (83% [535]) but was not associated with CVD or CVD risk factors.

Conclusion: In this community sample of AAs in Minnesota, CVD risk factors were high, as was trust in health care providers. Those with greater CVD risk perceptions had higher CVD prevalence. Consideration of sociodemographic and psychosocial influences on CVD and CVD risk factors could inform development of effective cardiovascular health promotion interventions in the AA Minnesota community.

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From the Cardiovascular Division, University of Minnesota Medical School, Minneapolis (J.R.V.H., S.D.); Division of Epidemiology and

Affiliations continued at the end of this article.

Minnesota has the lowest age-adjusted heart disease mortality in the United States.[1] Yet, disparities in cardiovascular disease (CVD) exist in Minnesota, with African American (AA) adults aged 35 to 64 years having nearly double the rate of cardiovascular (CV) mortality compared with their White counterparts.[2] Furthermore, AAs have higher rates of CVD risk factors than Whites, including physical inactivity, poor diet, hypertension, diabetes, and obesity.[3] Thus, there is a crucial need for primary prevention efforts to alleviate the burden of cardiometabolic factors that place AAs in Minnesota at higher risk for CVD. There

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are several examples of small and large-scale, community-based interventions that target health behaviors to improve CV health by lowering blood pressure, increasing physical activity, and promoting healthy eating among AAs.[4-7] However, there is little integration of these programs within AA communities in Minnesota; prior studies have focused solely on one sector of the Black community, namely, African immigrants/refugees.[8,9]

A recent analysis suggested that AAs in the Minnesota Heart Survey (MHS) have a lower CV mortality rate compared with those in the Atherosclerosis Risk in Communities (ARIC) study (recruiting primarily in the southern United States) largely owing to fewer risk factors at baseline.[10] A more contemporary study of AAs enrolled in the Minnesota Heart Health Program (MHHP) Ask About Aspirin study revealed a higher CV risk factor burden among participants at baseline than among those within the MHS.[11] However, there is limited knowledge on psychosocial factors associated with CVD and CVD risk factors among AAs in Minnesota. To address this gap, we assessed self-reported CVD and CVD risk factors and their association with sociodemographic characteristics and health beliefs among AA adults enrolled in the MHHP study.

METHODS

Study Population and Data Collection

In the MHHP study, trained community health workers recruited study participants, aged 45 to 79 years, from May to September 2019 in the Minneapolis–St Paul, Minnesota, metropolitan (urban) area. Enrollment sites included community health fairs, churches, community centers, gyms, and senior housing apartments. After verbal consent was obtained, community health workers administered a 10-minute survey including sociodemographic characteristics, CVD history and risk factors, and beliefs about health and prevention. All participants were offered a $10 gift card for participation. The University of Minnesota Institutional Review Board reviewed and approved this study.

A total of 795 participants enrolled in the MHHP study. This analysis included 644 adults who self-identified as either Black or AA. Excluded participants consisted of those who did not identify as Black or AA (n=149), were outside the prespecified age range of 45 to 79 years (n=1), or reported sex other than male or female (n=1).

Study Variables

Cardiovascular Disease and Risk Factors. Prevalent CVD and CVD risk factors were assessed by self-report. Positive CVD history included any yes response to the following: "Have you ever been told by a doctor or other health professional that you had coronary artery disease (CAD) or a heart attack; a stroke; peripheral artery disease (PAD) or blockages in your leg arteries or decreased blood flow to your legs; or revascularization or a procedure to open up or bypass blocked arteries in your heart, leg, or neck?" The survey included questions to assess CVD risk factors by querying, "Have you ever been told by a doctor or other health professional that you had high blood pressure, high blood cholesterol, or diabetes?" and to those who smoked more than 100 cigarettes in a lifetime, "Do you smoke at present?" These questions were based on other national and statewide surveys evaluating self-reported CVD risk factors.[12-14]

Psychosocial Factors. Sociodemographic factors included age, sex (male or female), marital status, and educational attainment. Age was assessed as both continuous and categorical (45 to 49, 50 to 59, 60 to 69, and 70 to 79 years) variables. Marital status was categorized as single, married, separated/divorced, or widowed. Educational attainment level was classified as less than a high-school degree, high-school graduate, some college, or college/graduate school completion. Four health belief items were assessed: (1) self-awareness of actions on health ("Your decisions and actions can have a positive effect on your health"); (2) trust in health care provider ("You completely trust

TABLE 1. Participants' Sociodemographic Characteristics and Health Beliefs by Sex[a,b]

Variable	Total (N=644)	Men (n=232)	Women (n=412)	*P* value
Age (y)				.23
45-49	70 (11)	25 (11)	45 (11)	
50-59	204 (32)	85 (37)	119 (29)	
60-69	249 (39)	83 (36)	166 (40)	
70-79	121 (19)	39 (17)	82 (20)	
Mean (SD)	61.2 (8.6)	60.4 (8.3)	61.7 (8.7)	.08
Ethnicity				
Hispanic	6 (1)	2 (<1)	4 (1)	1.0
Non-Hispanic	638 (99)	230 (99)	408 (99)	
Marital status				<.01
Married	225 (35)	97 (42)	128 (31)	
Single	231 (36)	86 (37)	145 (35)	
Separated/divorced	134 (21)	43 (19)	91 (22)	
Widowed	51 (8)	6 (3)	45 (11)	
Education level				.06
Less than high school	66 (10)	32 (14)	34 (8)	
High-school graduate	149 (23)	54 (23)	95 (23)	
Some college	269 (42)	99 (43)	170 (41)	
College/graduate school graduate	160 (25)	47 (20)	113 (27)	
CVD risk factors				
Current cigarette smoking	163 (25)	74 (32)	89 (22)	.004
Hypertension	434 (67)	148 (64)	286 (69)	.14
Hyperlipidemia	301 (47)	107 (46)	194 (47)	.81
Diabetes	219 (34)	88 (38)	131 (32)	.12
Self-reported CVD				
Any CVD	119 (19)	51 (22)	68 (17)	.09
Coronary artery disease	41 (6)	17 (7)	24 (6)	.45
Stroke	48 (8)	24 (10)	24 (6)	.04
Peripheral artery disease	48 (8)	20 (9)	28 (7)	.40
Revascularization procedure	50 (8)	25 (11)	24 (6)	.01
Health beliefs (somewhat agree/strongly agree)				
Self-awareness of actions on health: Your decisions and actions can have a positive effect on your health.	637 (99)	229 (99)	408 (99)	.71
Trust in health care provider: You completely trust your doctor's decisions about which treatments are best for you.	535 (83)	186 (80)	349 (85)	.16
Importance of CVD prevention: Preventing a heart attack or stroke is very important to you.	635 (99)	228 (98)	407 (99)	1.0
CVD risk perception: Your chances of getting a heart attack or stroke in the next few years are great.	249 (39)	92 (40)	157 (38)	.31

[a]CVD, cardiovascular disease.
[b]All values are presented as number (percentage) of participants except as indicated.

your doctor's decisions about which treatments are best for you"); (3) importance of CVD prevention ("Preventing a heart attack or stroke is very important to you"); and (4) CVD risk perception ("Your chances of getting a heart attack or stroke in the next few

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years are great"). Response options for each item used a 4-point Likert scale (strongly disagree to strongly agree) with an additional response of "don't know." There were 3 missing responses to question 3 (importance of CVD prevention) and 2 missing responses to question 4 (CVD risk perception); these were coded as don't know responses. Affirmative (strongly agree, somewhat agree) and negative (somewhat disagree, strongly disagree, don't know) responses were combined to form a dichotomous variable.

Statistical Analyses

Descriptive data were stratified by sex and presented as number (percentage) for categorical data and mean (standard deviation) for age. Sex differences in the descriptive data were tested using χ^2 and Student *t*-test for categorical and continuous data, respectively. Poisson regression modeling with robust error variance was used to evaluate associations between participants' characteristics and CVD risk factors, adjusting for age and sex. Poisson regression was also used to examine prevalence ratios (PRs) between participants' characteristics and self-reported CVD. This analysis included the following models: an unadjusted model; model 1 adjusted for age and sex; and model 2 adjusted for model 1 plus CVD risk factors (cigarette smoking, hypertension, hyperlipidemia, and diabetes). For all models, those with affirmative responses to the health belief questions were compared with those with a negative or don't know response. All analyses were performed using Stata version 16 (StataCorp LLC).

RESULTS

Study Sample

Table 1 displays the participants' sociodemographic characteristics and health beliefs overall and by sex. The mean age of the participants was 61.2 (SD 8.6) years; 64% (412) were women. The sample was well educated, with 67% (429) attending or graduating from college or graduate school. Marital status differed by sex. Compared with women, more men were married (42% [97] vs 31% [128]) and fewer were separated/divorced or widowed (22% [49] vs 33% [136]). Risk factors for CVD were common, including hypertension (67% [434]), hyperlipidemia (47% [301]), and diabetes (34% [219]). One-quarter of participants reported current cigarette smoking, with a prevalence greater among men compared with women (32% [74] vs 22% [89]). In total, 19% (119) of participants had self-reported CVD (22% [51] men, 17% [68] women). The proportions of participants with CAD, stroke, and PAD were 6% [41], 8% [48], and 8% [48], respectively.

Nearly all participants agreed that their actions could affect health (99% [637]) and that CVD prevention was important to them (99% [635]); 83% (535) reported trust in their health care provider, and 39% (249) had a perception that their risk of a CV event was high. There was no evidence of a difference in the health belief responses by sex.

Prevalence of CVD Risk Factors and Associations With Sociodemographic Characteristics and Health Beliefs

All self-reported CVD risk factors were strongly associated with age (Table 2). The proportion of participants reporting current cigarette smoking decreased with age, whereas hypertension, hyperlipidemia, and diabetes increased with age. After age and sex adjustment, single respondents were more likely to report current smoking (adjusted PR, 2.22; CI, 1.58 to 3.14) and to have hyperlipidemia (adjusted PR, 1.25; CI, 1.03 to 1.51) compared with married participants. Smoking prevalence decreased with increased education level; 9% (15) of college graduates smoked compared with 41% (27) of those with less than a high-school degree (adjusted PR, 0.24; CI, 0.14 to 0.42). No other CVD risk factors were significantly associated with education level.

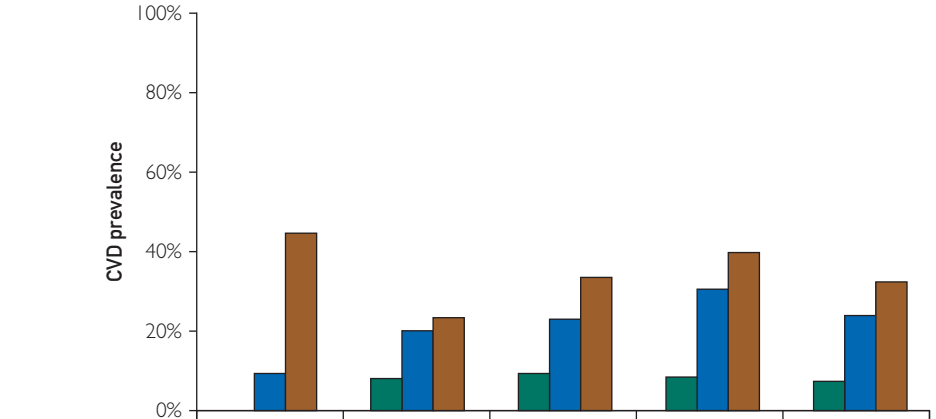
The prevalence of CVD risk factors did not vary by health beliefs except for those who agreed that their CVD risk was high. Increased CVD risk perception was associated with a higher prevalence of hyperlipidemia (PR, 1.34; CI, 1.14 to 1.57) and

TABLE 2. Age- and Sex-Adjusted Associations of Self-Reported CVD Risk Factors With Sociodemographic Characteristics and Health Beliefs[a,b]

Variable	Total	Cigarette smoking (n=163)		Hypertension (n=434)		Hyperlipidemia (n=301)		Diabetes (n=219)	
		No. (%)	PR (95% CI)	No. (%)	PR (95% CI)	No. (%)	PR (95% CI)	No. (%)	PR (95% CI)
Age (y)									
45-49	70	23 (33)	Reference	26 (37)	Reference	16 (23)	Reference	12 (17)	Reference
50-59	204	62 (31)	0.90 (0.61-1.34)	127 (62)	1.68 (1.22-2.32)	88 (43)	1.89 (1.19-2.99)	59 (29)	1.67 (0.95-2.91)
60-69	249	60 (24)	0.74 (0.50-1.10)	179 (72)	1.93 (1.41-2.65)	133 (53)	2.34 (1.50-3.65)	95 (38)	2.24 (1.30-3.84)
70-79	121	18 (15)	0.46 (0.27-0.79)	102 (84)	2.26 (1.65-3.10)	64 (53)	2.31 (1.46-3.67)	53 (44)	2.57 (1.48-4.48)
Sex									
Women	412	89 (22)	Reference	286 (69)	Reference	194 (47)	Reference	131 (32)	Reference
Men	232	74 (32)	1.43 (1.10-1.86)	148 (64)	0.95 (0.85-1.06)	107 (46)	1.00 (0.84-1.19)	88 (38)	1.24 (0.99-1.54)
Marital status									
Married	225	36 (16)	Reference	145 (64)	Reference	97 (43)	Reference	68 (30)	Reference
Single	231	81 (35)	2.22 (1.58-3.14)	157 (68)	1.06 (0.93-1.20)	124 (54)	1.25 (1.03-1.51)	87 (38)	1.29 (1.00-1.66)
Separated/divorced	134	36 (27)	1.87 (1.24-2.81)	90 (67)	0.98 (0.85-1.13)	51 (38)	0.84 (0.65-1.10)	47 (35)	1.11 (0.82-1.50)
Widowed	51	10 (20)	1.77 (0.92-3.42)	40 (78)	0.97 (0.82-1.16)	29 (57)	1.12 (0.84-1.51)	16 (31)	0.87 (0.55-1.37)
Education level									
Less than high school	66	27 (41)	Reference	51 (77)	Reference	35 (53)	Reference	27 (41)	Reference
High-school graduate	149	54 (36)	0.87 (0.62-1.24)	99 (66)	0.88 (0.75-1.03)	77 (52)	1.00 (0.76-1.31)	58 (39)	1.02 (0.71-1.45)
Some college	269	67 (25)	0.58 (0.41-0.83)	176 (65)	0.90 (0.77-1.04)	113 (42)	0.83 (0.63-1.09)	86 (32)	0.87 (0.62-1.23)
College/graduate school graduate	160	15 (9)	0.24 (0.14-0.42)	108 (68)	0.87 (0.74-1.02)	76 (48)	0.90 (0.68-1.19)	48 (30)	0.77 (0.53-1.11)
Health beliefs									
Self-awareness of actions on health									
Disagree/don't know	7	3 (43)	Reference	3 (43)	Reference	3 (43)	Reference	2 (29)	Reference
Agree	637	160 (25)	0.63 (0.25-1.57)	431 (68)	1.46 (0.60-3.56)	298 (47)	1.03 (0.46-2.32)	217 (34)	1.12 (0.34-3.73)
Trust in health care provider									
Disagree/don't know	109	37 (34)	Reference	68 (62)	Reference	44 (40)	Reference	28 (26)	Reference
Agree	535	126 (24)	0.80 (0.59-1.09)	366 (68)	0.96 (0.83-1.13)	257 (48)	1.09 (0.85-1.40)	191 (36)	1.23 (0.87-1.73)
Importance of CVD prevention									
Disagree/don't know	9	3 (33)	Reference	7 (78)	Reference	2 (22)	Reference	1 (11)	Reference
Agree	635	160 (25)	0.83 (0.31-2.22)	427 (67)	0.83 (0.62-1.12)	299 (47)	2.06 (0.59-7.22)	218 (34)	3.04 (0.49-18.90)
CVD risk perception									
Disagree/don't know	395	96 (24)	Reference	257 (65)	Reference	161 (41)	Reference	106 (27)	Reference
Agree	249	67 (27)	1.17 (0.89-1.52)	177 (71)	1.05 (0.94-1.16)	140 (56)	1.34 (1.14-1.57)	113 (45)	1.61 (1.30-1.98)

[a]CVD, cardiovascular disease; PR, prevalence ratio.

[b]All prevalence values are presented as number (percentage) of participants with each risk factor. Separate models were run for each risk factor and participant's characteristic.



	45-49 years	50-59 years	60-69 years	70-79 years	Total
0-1 risk factor	0/50	8/102	9/97	3/37	20/286
2 risk factors	1/11	10/50	17/74	14/46	42/176
3+ risk factors	4/9	12/52	26/78	15/38	57/177

FIGURE. Self-reported cardiovascular disease (CVD) prevalence by number of CVD risk factors among each age group. The prevalence of CVD increased with additional CVD risk factors in all age groups.

diabetes (PR, 1.61; CI, 1.30 to 1.98) compared with those who did not agree that their CVD risk was high.

Prevalence of CVD and Associations With Sociodemographic Characteristics, Health Beliefs, and CVD Risk Factors

Overall, the prevalence of self-reported CVD increased with the number of CVD risk factors for each age group (Figure). In general, CVD prevalence increased with age in all risk factor categories. However, the highest prevalence of CVD was in the youngest age group (45 to 49 years) with 3 or more CVD risk factors. All participants with 0 or 1 risk factor had low CVD prevalence, less than 10% across age groups. In participants with 3 or more risk factors, CVD prevalence increased to 20% or more regardless of age and was more than 30% in the total sample. Using age as a continuous variable, CVD prevalence increased by 16% for every 5 years in the fully adjusted model (PR, 1.16; CI, 1.05 to 1.29; Table 3). Men had a higher unadjusted prevalence of CVD than women (22% [51/232] vs 17% [68/412]), but the difference was not statistically significant in any of the models. Participants who were separated or divorced had a higher prevalence of CVD compared with those who were married (26% [35/134] vs 15% [34/225]), a significant factor even after adjustment for age, sex, and CVD risk factors (PR, 1.63; CI, 1.08 to 2.46; Table 3). Higher education level was associated with lower CVD prevalence after adjustment for age and sex (PR, 0.71; CI, 0.51 to 0.97; Table 3), but this association was attenuated after adjustment for other CVD risk factors and was no longer statistically significant.

Increased CVD risk perception was associated with a higher prevalence of self-reported CVD across all models (adjusted PR, 1.61; CI, 1.16 to 2.23; Table 3). There was no evidence of other significant associations between health beliefs and CVD prevalence. In participants expressing trust in health care providers compared with those who did not, CVD burden was similar (PR, 1.10; CI, 0.68 to 1.78).

DISCUSSION

This study provides a contemporary assessment of CVD and CVD risk factors among AAs sampled from a large metropolitan area in Minnesota and adds new information

TABLE 3. Associations of Self-Reported CVD With Sociodemographic Characteristics and Health Beliefs[a]

Variable	No. (N=644)	Self-reported CVD[b] (n=119)	Unadjusted PR (95% CI)	Model 1[c] PR (95% CI)	Model 2[d] PR (95% CI)	*P* value[e]
Age, per 5 years			1.22 (1.11-1.35)	1.23 (1.12-1.36)	1.16 (1.05-1.29)	.004
Age groups (y)						
45-49	70	5 (7)	Reference	Reference	Reference	
50-59	204	30 (15)	2.06 (0.83-5.10)	2.02 (0.81-5.01)	1.41 (0.59-3.38)	.44
60-69	249	52 (21)	2.92 (1.21-7.04)	2.95 (1.22-7.10)	1.78 (0.76-4.18)	.18
70-79	121	32 (26)	3.70 (1.51-9.07)	3.75 (1.53-9.17)	2.25 (0.95-5.31)	.06
Sex						
Women	412	68 (17)	Reference	Reference	Reference	
Men	232	51 (22)	1.33 (0.96-1.84)	1.41 (1.02-1.94)	1.31 (0.96-1.80)	.09
Marital status						
Married	225	34 (15)	Reference	Reference	Reference	
Single	231	41 (18)	1.17 (0.77-1.78)	1.24 (0.82-1.87)	1.03 (0.69-1.53)	.90
Separated/divorced	134	35 (26)	1.73 (1.13-2.63)	1.65 (1.09-2.51)	1.63 (1.08-2.46)	.02
Widowed	51	9 (18)	1.17 (0.60-2.28)	0.96 (0.48-1.92)	0.89 (0.46-1.70)	.72
Education level						
High-school graduate or less	215	51 (24)	Reference	Reference	Reference	
At least some college	429	68 (16)	0.67 (0.48-0.92)	0.71 (0.51-0.97)	0.83 (0.61-1.14)	.25
Health beliefs						
Self-awareness of actions on health						
Disagree/don't know	7	1 (14)	Reference	Reference	Reference	
Agree	637	118 (19)	1.30 (0.21-8.03)	1.20 (0.18-8.01)	0.89 (0.13-6.08)	.90
Trust in health care provider						
Disagree/don't know	109	16 (15)	Reference	Reference	Reference	
Agree	535	103 (19)	1.31 (0.81-2.13)	1.09 (0.67-1.80)	1.10 (0.68-1.78)	.70
Importance of CVD prevention						
Disagree/don't know	9	3 (33)	Reference	Reference	Reference	
Agree	635	116 (18)	0.55 (0.21-1.40)	0.54 (0.26-1.13)	0.52 (0.22-1.26)	.15
CVD risk perception						
Disagree/don't know	395	53 (13)	Reference	Reference	Reference	
Agree	249	66 (27)	1.98 (1.43-2.73)	1.84 (1.33-2.54)	1.61 (1.16-2.23)	.004

[a]CVD, cardiovascular disease; PR, prevalence ratio.
[b]Self-reported CVD is defined as coronary artery disease, stroke, peripheral artery disease, or revascularization procedure. All values are presented as number (percentage) of participants.
[c]Model 1 is adjusted for age and sex.
[d]Model 2: model 1 plus adjustment for CVD risk factors.
[e]*P* values are presented for model 2.

on their association with health beliefs. Risk factors for CVD were common among participants, higher than previously described in the MHS.[15] Although the sample size was small, the youngest age group had a high CVD prevalence. In total, CVD prevalence was more than 30% among participants with 3 or more CVD risk factors. Participants with greater CVD risk perceptions reported a higher prevalence of hyperlipidemia, diabetes, and CVD compared with those with lower perceived risk. Trust in health care providers was high in this sample (83%) but was not associated with CVD or CVD risk factors. In addition, health beliefs probing self-awareness of actions on health or importance of CVD prevention were not found to be associated with CVD or CVD risk factors.

Middle-aged AA adults suffer from increased CVD mortality compared with White adults of the same age. Two large community cohorts, the ARIC and Reasons for Geographic and Racial Differences in

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Stroke (REGARDS) studies, found approximately 2-fold increased age-adjusted risk for CAD mortality in Black men and women compared with Whites 45 to 64 years old.[16] When adjusted for CVD risk factors and social determinants of health (education, income, and health insurance), this difference was attenuated. Published data found that CVD mortality was lower in AAs from Minnesota compared with the ARIC cohort. The authors reported that CVD mortality was nearly triple for men and 2.5-fold higher in women in ARIC compared with men and women in the MHS.[10] There were major limitations in the MHS data, including reliance on state and National Death Index records for mortality. There was also no assessment of prevalent CVD at baseline with the assumption that prevalence was low, similar to the 4% found in the ARIC study. Although participants in this study were older than the MHS participants (mean age, 61 years vs 54 years), CVD prevalence was 19%, much higher than the assumed 4% in MHS.

The prevalence of CVD in this study was similar to prevalence in other cohorts. According to the National Health and Nutrition Examination Survey (NHANES), total CVD prevalence in adults older than 20 years is 11% for AA men and women.[17] In the ARIC cohort, the baseline CVD prevalence was 12% for Black men (mean age, 54 years) and 13% for Black women (mean age, 53 years) who were 6 to 8 years younger on average than our sample.[18] The individual types of CVD differed in our study compared with national averages. The prevalence of CAD was lower than expected,[17] but stroke was higher and PAD was similar compared with other population-based samples.[19,20] Low CAD prevalence could be due to underreporting of CAD without myocardial infarction or may be a result of nonrandom sampling.

The Minnesota population has an overall low prevalence of CVD risk factors. In the MHS, among adults with an average age of 53 years, hypertension (29%), hyperlipidemia (29%), and diabetes (5%) were all below national averages, whereas current smoking (17%) was similar.[15] There are limited data on the CVD risk factors for Black Minnesotans, and our study demonstrated a much higher prevalence compared with the mostly White population in the MHS. One difference between these surveys is that we sampled AA adults in urban settings only, whereas the MHS enrolled participants from rural areas as well. This would not explain the higher prevalence of CVD risk factors we observed because rural-dwelling adults consistently experience worse CV health and increased CVD risk factors compared with urban adults independent of race.[21-24] The Jackson Heart Study (JHS) is a contemporary, prospective, community-based cohort of AA adults designed to investigate CVD risk factors.[25] We again observed higher prevalence of CVD risk factors in our participants compared with the JHS, including current smoking (25% vs 13%), hyperlipidemia (47% vs 33%), and diabetes (34% vs 19%).[26] Hypertension prevalence was marginally higher, 67% compared with 63% in the JHS.[26] These baseline JHS data were collected in 2000 to 2004, and mean age was younger than in our sample (55 years vs 61 years).[25] Younger age and earlier sampling time frame may account for the lower prevalence of CVD risk factors in the JHS with stable or modest increases in CVD risk factors among AAs over time.[17,27] Similar to our sample, 61% of the JHS participants reported some level of post-secondary education; thus, education is less likely to be a major factor in the observed differences in CVD risk factors.[26]

As expected, we found that all CVD risk factors increased with age except for smoking, which was highest in the youngest age group (45 to 49 years). Although there were few participants in this youngest age group with multiple risk factors, those with 3 or more had a high prevalence of CVD. It is important to identify this younger AA population with multiple CVD risk factors because they have a much higher risk of a CV event compared with White adults with similar risk factor levels.[28] Not only is CV

event rate increased, but the case-fatality rate for incident CVD is higher for AAs compared with Whites, particularly in younger to middle-aged adults.[16,29,30]

Several studies have documented lower trust of physicians among AAs compared with Whites.[31-34] The high level of trust in health care providers reported by our participants (83%) is likely to be multifactorial, reflective of favorable patient-provider relationships among this sample. Although not evaluated in this study, another factor associated with higher trust of health care providers among AAs is race concordance between patient and physician. Race concordance has been associated with longer visits,[35] higher level of engagement,[36] and higher probability of seeking preventive care[37] compared with race discordance.

More than one-third of participants reported high self-perceived risk for a heart attack or stroke. This perception was associated with increased prevalence of CVD, hyperlipidemia, and diabetes, reflecting appropriate insight among high-risk participants. In contrast, data from an urban, primarily AA sample in Pennsylvania showed significantly lower perceived CVD risk compared with calculated risk.[38] Patients who understand their increased CVD risk may be more motivated to adopt lifestyle modifications, to use medications for risk reduction, and to follow evidence-based CVD prevention recommendations. There may be an opportunity to intervene to reduce cardiometabolic risk factor profiles in this population.

Strengths

To our knowledge, this study is one of the first to demonstrate the high CVD risk factor burden among AAs in Minnesota. Community-based sampling allowed evaluation of individuals regardless of their interaction with health care systems. In addition, we documented key health beliefs in this understudied population.

Limitations

Limitations to data interpretation include the use of a convenience sample of AA adults recruited from urban locations in the Minneapolis–St Paul metropolitan area; thus, it may not be representative of other AA populations including AAs residing in nonurban areas. In particular, this was a highly educated sample, with 67% of participants with at least some college experience. The sample size limits the power to detect CVD and CVD risk factor associations in some sociodemographic subgroups. We asked a limited number of questions about social determinants of health in an effort to reduce the burden on participants but anticipate a more in-depth evaluation in future studies.

CONCLUSION

This study finds a high prevalence of CVD and CVD risk factors in a sample of AA adults in Minnesota, a state known for low rates of CVD. The study adds new information on sociodemographic and psychosocial influences on CVD and CVD risk factors that could inform development of effective CV health promotion interventions in the AA Minnesota community.

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Abbreviations and Acronyms: **AA**, African American; **ARIC**, Atherosclerosis Risk in Communities; **CAD**, coronary artery disease; **CV**, cardiovascular; **CVD**, cardiovascular disease; **JHS**, Jackson Heart Study; **MHHP**, Minnesota Heart Health Program; **MHS**, Minnesota Heart Survey; **PAD**, peripheral artery disease; **PR**, prevalence ratio

Affiliations (Continued from the first page of this article.): Community Health, University of Minnesota School of Public Health, Minneapolis (R.V.L.); Hue-Man Partnership, Minneapolis, MN (C.J.); Department of Cardiovascular Medicine (S.N.H., L.C.B.), Department of Psychiatry and Psychology (C.A.P.), and Center for Health Equity and Community Engagement Research (L.C.B.), Mayo Clinic, Rochester, MN; and Department of Medicine, Johns Hopkins School of Medicine, Baltimore, MD (L.A.C.).

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Correspondence: Address to LaPrincess C. Brewer, MD, MPH, Department of Cardiovascular Medicine, Mayo Clinic, 200 First St SW, Rochester, MN 55905 (brewer.laprincess@mayo.edu).

ORCID

Jeremy R. Van't Hof: https://orcid.org/0000-0002-9982-3685; Sharonne N. Hayes: https://orcid.org/0000-0003-3129-362X; LaPrincess C. Brewer: https://orcid.org/0000-0002-6468-9324

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